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EXAMINER

AJIBADE AKONAI, OLUMIDE

ART UNIT PAPER NUMBER

2617

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Please find below and/or attached an Office communication concerning this application or proceeding.



Art Unit: 2617

1. The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2617.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 25, 36 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bringby et al 6,283,883 (hereinafter Bringby)** in view of **Itoh et al "Performance of Handoff Algorithm Based on Distance and RSSI Measurements" (hereinafter Itoh)**.

Regarding **claim 25**, Bringby discloses a method for facilitating handover between a base station pair (originating and neighbor BS's, see col. 3, lines 61-67, col. 4, lines 1-8) in a communication system comprising: computing a cost function (hysteresis plus RSSI\_orig, see col. 4, lines 23-28) for the base station pair (BS's of the originating and neighbor cell, see fig. 3, col. 3, lines 61-67 and col. 4, lines 1-7) dependent on a relative received signal strength (RSSI\_orig, see col. 3, lines 23-28) and an adaptive hysteresis factor (hysteresis level, see col. 4, lines 23-28, 39-50 and col. 5, lines 1-16); selecting a base station from the pair dependent on the cost function (handoff to a neighbor BS is initiated if the RSSI\_orig plus hysteresis is lower than the RSSI\_neighbor, see col. 4, lines 23-28).

Bringby fails to disclose selecting a base station from the pair of base stations dependent on the cost function and a second factor, wherein the second factor is either base station load or physical distance between a user terminal and the base station.

In the same field of endeavor, Itoh discloses selecting a base station from the pair of base stations dependent on the cost function (inherent, since measured signal strength from a serving base station in a cell A is compared the signal strength of a base station in an adjacent cell B to see if the signal strength from the adjacent station exceeds that of the serving base station by a hysteresis value  $h$ , see fig. 1(a), p.1461, lines 1-10) and a second factor (measured distance, see fig. 1(a), p.1461, lines 10-15), wherein the second factor is either base station load or physical distance between a user terminal and the base station (measured distance, see fig. 1(a), p.1461, lines 10-15).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Itoh into the system of Bringby for the benefit of reducing average handoff delay and the average number of handoffs in a mobile communication system.

Regarding **claim 36**, Bringby discloses a machine-readable medium having stored thereon a set of machine-executable instructions (mobile station, MS, see col. 2, line 56-58) that, when executed by a data-processing system, cause the system to perform a method for facilitating handover between a base station pair (originating and neighbor BS's, see col. 3, lines 61-67, col. 4, lines 1-8) in a communication system

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comprising: computing a cost function (hysteresis plus RSSI\_orig, see col. 4, lines 23-28) for the base station pair based on a relative received signal strength (RSSI\_orig, see col. 3, lines 23-28) and an adaptive hysteresis factor (hysteresis level, see col. 4, lines 23-28, 39-50 and col. 5, lines 1-16); selecting a base station from the pair dependent on the cost function (handoff to a neighbor BS is initiated if the RSSI\_orig plus hysteresis is lower than the RSSI\_neighbor, see col. 4, lines 23-28).

Bringby fails to disclose selecting a base station from the pair dependent on the cost function and a second factor, wherein the second factor is either base station load or physical distance between a user terminal and the base station.

In the same field of endeavor, Itoh discloses selecting a base station from the pair of base stations dependent on the cost function (inherent, since measured signal strength from a serving base station in a cell A is compared the signal strength of a base station in an adjacent cell B to see if the signal strength from the adjacent station exceeds that of the serving base station by a hysteresis value  $h$ , see fig. 1(a), p.1461, lines 1-10) and a second factor (measured distance, see fig. 1(a), p.1461, lines 10-15), wherein the second factor is either base station load or physical distance between a user terminal and the base station (measured distance, see fig. 1(a), p.1461, lines 10-15).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Itoh into the system of Bringby for the benefit of reducing average handoff delay and the average number of handoffs in a mobile communication system.

Regarding **claim 44**, Bringby discloses a processing unit for facilitating handover between a base station pair in a communication system (inherent, since it is well known for a mobile station, MS, to have a CPU, controller or processing unit to accomplish the tasks of receiving the signal strength from the originating and neighbor base stations and calculating the hysteresis factor, see col. 2, line 56-58), comprising: a base station selection unit to select a base station dependent on the inputs from a received signal strength measurement (RSSI) unit (inherent, since it is well known for a mobile station, MS, to have a CPU, controller or processing unit to accomplish the tasks of receiving the signal strength from the originating and neighbor base stations and calculating the hysteresis factor, and based on the calculated hysteresis factor plus the RSSI, initiating a handoff, see col. 2, 56-58, col. 4, lines 1-28), an adaptive hysteresis calculation unit (see col. 4, lines 23-28).

Bringby fails to disclose a distance calculation unit.

In the same field of endeavor, Itoh discloses a distance calculation unit (see fig. 1(a), p.1461, lines 1-15).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Itoh into the system of Bringby for the benefit of reducing average handoff delay and the average number of handoffs in a mobile communication system.

4. Claims 26 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bringby et al 6,283,883 (hereinafter Bringby)** in view of Itoh et al "**Performance**

***of Handoff Algorithm Based on Distance and RSSI Measurements"*** (hereinafter **Itoh**), as applied to claims 25 and 36 above, and further in view of **Watters et al 20010002822** (hereinafter **Watters**).

Regarding **claim 26**, as applied to claim 25, Bringby discloses the claimed invention except wherein the physical distance is derived from a propagation delay determined from a relative time-of-arrival of a broadcast message transmitted from the base station synchronized according to a common timing reference.

In the same field of endeavor, Watters discloses wherein the physical distance is derived from a propagation delay determined from a relative time-of-arrival of a broadcast message transmitted from the base station synchronized according to a common timing reference (calculation of distance using signal transmitted from base station, see fig. 3, p.3, [0021]-[0022]).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Watters into the system of Bringby et al for the benefit of providing a mobile terminal with a GPS receiver for determining location.

Regarding **claim 37**, as applied to claim 36, Bringby discloses the claimed invention except wherein the physical distance is derived from a propagation delay determined from a relative time-of-arrival of a broadcast message transmitted from the base station synchronized according to a common timing reference.

In the same field of endeavor, Watters discloses wherein the physical distance is derived from a propagation delay determined from a relative time-of-arrival of a broadcast message transmitted from the base station synchronized according to a

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common timing reference (calculation of distance using signal transmitted from base station, see fig. 3, p.3, [0021]-[0022]).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Watters into the system of Bringby et al for the benefit of providing a mobile terminal with a GPS receiver for determining location.

5. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Bringby et al 6,283,883 (hereinafter Bringby)** in view of Itoh et al "*Performance of Handoff Algorithm Based on Distance and RSSI Measurements*" (hereinafter Itoh), as applied to claim 25 above, and further in view of **Akopian et al 6,466,164 (hereinafter Akopian)**.

Regarding **claim 27**, as applied to claim 25, Bringby discloses the claimed invention except wherein the physical distance is derived from a time-of-arrival of a time-stamped message transmitted from the base station.

In the same field of endeavor, Akopian teaches wherein the physical distance is derived from a time-of-arrival of a time-stamped message transmitted from the base station (see col. 1, lines 13-39).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Akopian into the system of Bringby for the benefit of determining the pseudorange from a receiver to a beacon that transmits a ranging signal.

6. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Bringby et al 6,283,883 (hereinafter Bringby)** in view of Itoh et al "*Performance of Handoff*



***Algorithm Based on Distance and RSSI Measurements"*** (hereinafter Itoh) as applied to claim 44 above, and further in view of **Hashem et al 20030073455** (hereinafter Hashem).

Regarding **claim 45**, as applied to claim 44, Bringby further discloses wherein the base station selection unit selects the base station dependent on a cost function (handoff to a neighbor BS is initiated if the RSSI\_orig plus hysteresis is lower than the RSSI\_neighbor, see col. 4, lines 23-28).

Bringby fails to disclose wherein the base station selection unit selects the base station dependent on a base station load input.

In the same field of endeavor, Hashem discloses wherein the selection of a base station is dependent on a base station load input (see fig. 1, p.3, [0007]).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Hashem into the system of Bringby for the benefit of providing optimum data communication.

#### ***Allowable Subject Matter***

7. Claims 28-35, 38-43 and 46-48 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

8. Applicant's arguments with respect to claims 25-27, 36-37 and 44-45 have been considered but are moot in view of the new ground(s) of rejection.

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**Conclusion**

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hamalainen (6,363,252) discloses an advanced method for executing handover.

Ward et al WO 02/030135 A3 discloses an adaptive cellular communication handoff hysteresis.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olumide T. Ajibade-Akonai whose telephone number is 571-272-6496. The examiner can normally be reached on M-F, 8.30p-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph H. Feild can be reached on 571-272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

OA

  
ERIKA A. GARY  
PRIMARY EXAMINER

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